

We Claim:

1. An ultrasonic dental insert comprising:
  - a transducer for generating ultrasonic vibrations;
  - a tip for applying the ultrasonic vibrations at a
  - 5 location inside the mouth of a patient;
  - a connecting body disposed between and attached to the transducer and the tip, the connecting body for transmitting the ultrasonic vibrations from the transducer to the tip;
  - a retaining ring snapped onto the connecting body; and
  - 10 a hand grip fitted at least partially over the connecting body and the retaining ring.
2. The ultrasonic dental insert of claim 1, wherein the retaining ring comprises a pair of gripping elements for
- 15 snapping onto the connecting body.
3. The ultrasonic dental insert of claim 2, wherein the connecting body has formed thereon a pair of indentations for engaging the pair of gripping elements.
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4. The ultrasonic dental insert of claim 1, wherein the retaining ring has a connecting portion for fitting over a corresponding portion of the connecting body.
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5. The ultrasonic dental insert of claim 4, wherein the connecting portion has a hole formed thereon for passing fluid into the ultrasonic dental insert.
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6. The ultrasonic dental insert of claim 5, wherein the hand grip defines a passageway formed near the tip for delivering the fluid to the location inside the mouth.

7. The ultrasonic dental insert of claim 1, further comprising a first O-ring, wherein the retaining ring has a first groove formed thereon for seating the first O-ring, and wherein the first O-ring provides a water tight sealing between  
5 the retaining ring and the hand grip.

8. The ultrasonic dental insert of claim 7, further comprising a second O-ring, wherein the retaining ring has a second groove formed thereon for seating the second O-ring, and  
10 wherein the second O-ring provides a pressure fitting engagement between the ultrasonic dental insert and an ultrasonic dental handpiece.

9. The ultrasonic dental insert of claim 1, wherein the  
15 hand grip has an undercut formed on its inside surface, wherein the retaining ring has a first flange formed thereon, and wherein the first flange fits tightly with the undercut.

10. The ultrasonic dental insert of claim 9, wherein the  
20 hand grip has a depressed region formed on its inside surface below the undercut, wherein a radius of the depressed region is larger than that of the undercut, wherein the retaining ring has a second flange formed thereon, and wherein the second flange fits tightly with the depressed region.

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11. The ultrasonic dental insert of claim 1, further comprising an O-ring, wherein the connecting body has a groove formed thereon for seating the O-ring, and wherein the O-ring forms a seal with an opening of the hand grip near the tip, so  
30 as to prevent undesired water leakage.

12. The ultrasonic dental insert of claim 1, wherein the transducer comprises a stack of nickel plates.

13. The ultrasonic dental insert of claim 1, wherein the  
5 hand grip has a protrusion formed on its inner surface for guiding the hand grip to fit over the retaining ring.

14. A method of assembling an ultrasonic dental insert comprising a tip attached to a connecting body, a transducer  
10 attached to the connecting body, a retaining ring and a hand grip, the method comprising:

snapping the retaining ring onto the connecting body;  
and

fitting the hand grip to the retaining ring and the  
15 connecting body by sliding it at least partially over the connecting body and the retaining ring.

15. The method of claim 14, wherein the retaining ring includes a pair of gripping elements, and wherein the snapping  
20 comprises snapping the pair of gripping elements onto the connecting body.

16. The method of claim 15, wherein the connecting body has formed thereon a pair of indentations, and wherein the  
25 snapping comprises snapping the pair of gripping elements into the pair of indentations.

17. The method of claim 14, wherein the retaining ring includes a connecting portion, and snapping comprises fitting  
30 the connecting portion over a corresponding portion of the connecting body.

18. An ultrasonic dental unit comprising:

an insert comprising:

a transducer for generating ultrasonic vibrations;

5 a tip for applying the ultrasonic vibrations at a location inside the mouth of a patient;

a connecting body disposed between and attached to the transducer and the tip, the connecting body for transmitting the ultrasonic vibrations from the transducer to  
10 the tip;

a retaining ring snapped onto the connecting body; and

a hand grip fitted at least partially over the connecting body and the retaining ring;

15 a handpiece for receiving the insert, the handpiece comprising a coil assembly for energizing the transducer, and a body for housing the coil assembly and receiving the insert.

19. The ultrasonic dental unit of claim 18, further  
20 comprising an electrical energy & fluid source for supplying electrical signals and fluid to the handpiece.

20. The ultrasonic dental unit of claim 18, wherein the retaining ring comprises a pair of gripping elements for  
25 snapping onto the connecting body.

21. The ultrasonic dental unit of claim 20, wherein the connecting body has formed thereon a pair of indentations for engaging the pair of gripping elements.

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22. The ultrasonic dental unit of claim 18, wherein the retaining ring has a connecting portion for fitting over a corresponding portion of the connecting body.

- 5        23. The ultrasonic dental unit of claim 18, wherein the hand grip is slid over the connecting body in a direction of an axis of the connecting body to be fitted at least partially over the connecting body and the retaining ring.